Funky Electrons 2

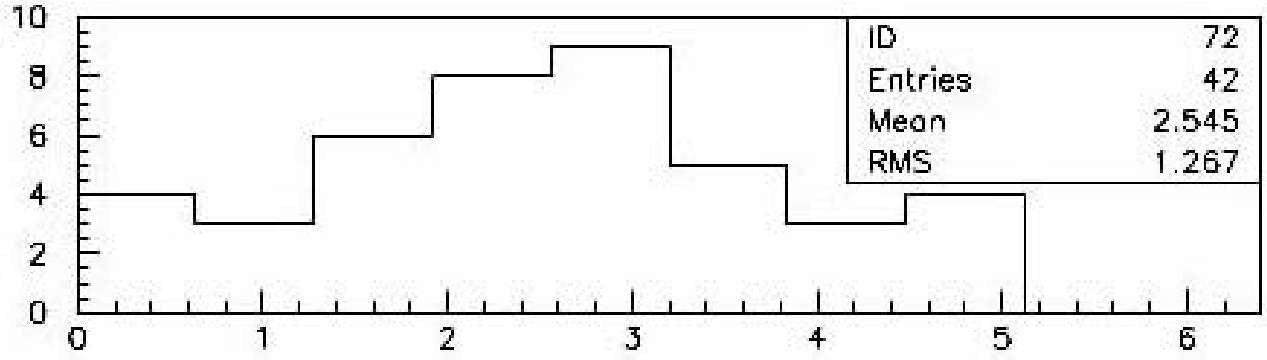
"Multiple primary tracks → Emcal cluster > 10 GeV"

Bruce Baller

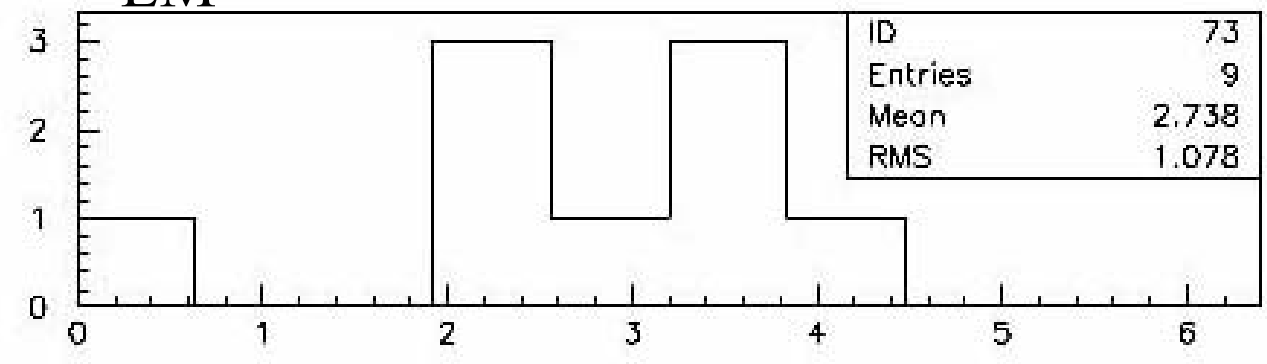
June 26, 2003

Status

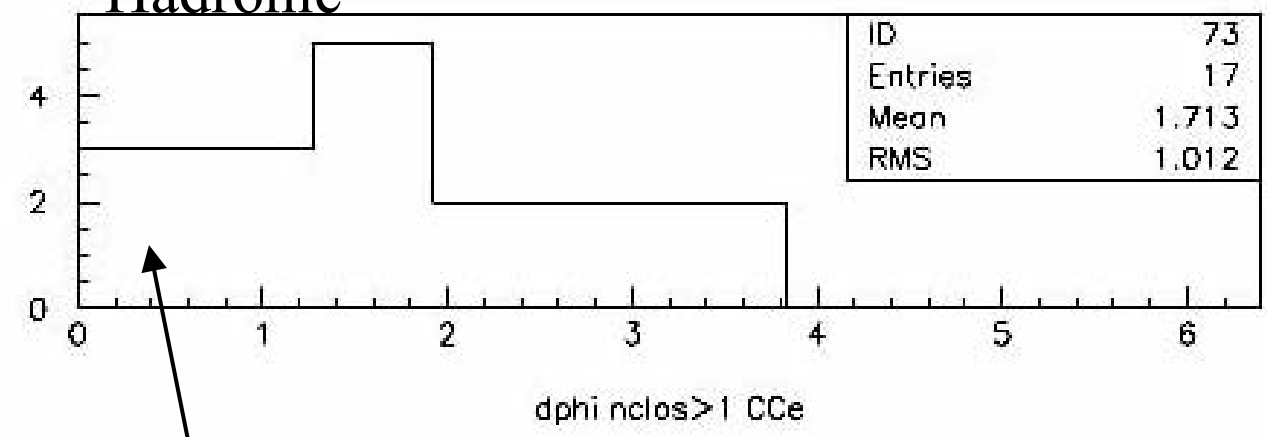
- Checked for "funky electron" events in NC Phase 1 and Phase 2 sample
  - 104 events
  - 10 events have EMCal cluster > 10 GeV
  - All tracks associated with clusters have 0 or 1 track
  - Expect ~4 events based on CCe sample (31/74 events)
- Revised event classification between electromagnetic (EM) and hadronic
  - Wide EMCal shower → EM
  - Narrow large PH SFT shower → EM
  - Brehmsstrahlung conversion tracks → EM
- Number of events w $\theta<40$ mr
  - 9 look EM
  - 17 look hadronic
- Histogram $\delta\phi$ assuming the calorimeter cluster direction = direction of the primary electron
  - Ignore primary tracks within 50 mr of the primary electron direction



EM



Hadronic



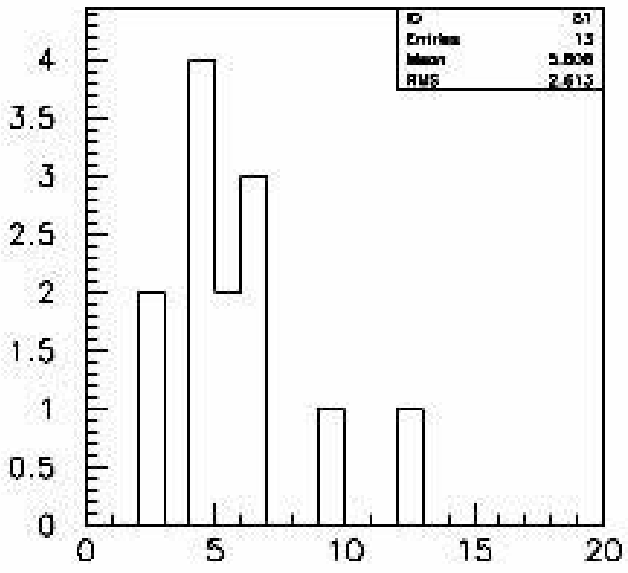
Note: τ event 3039_01910 $\delta\phi = 0.2$

EM events appear to be CCe (w internal brehmsstrahlung?)

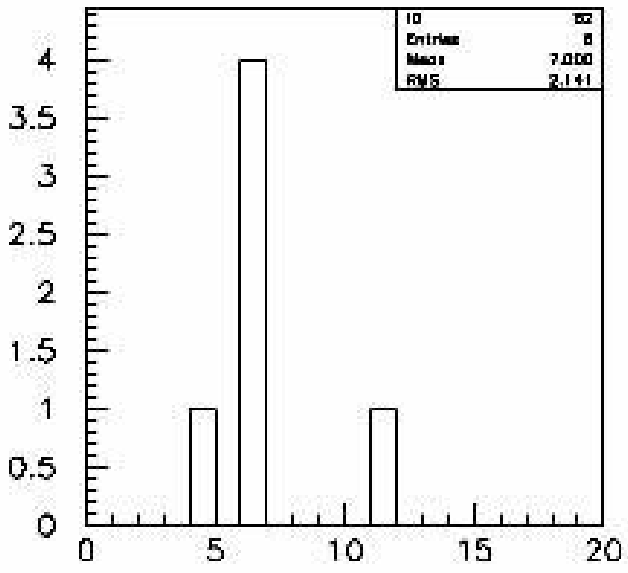
Funky Hadronic Event Scenario

- Are the 17 hadronic funky events due to
  - NC +
  - Large track multiplicity +
  - Track angular correlations +
  - Normal hadronic deposition in EMCal +
  - Event selection/location bias?
- All these effects **should** be modeled in the Monte Carlo except
  - Track angular correlations?
  - Event selection/location bias
- All these effects **should** be seen in CCmu events on the recoil side except
  - Event selection/location bias?
  - Compare primary track multiplicity for various classes of events on next page

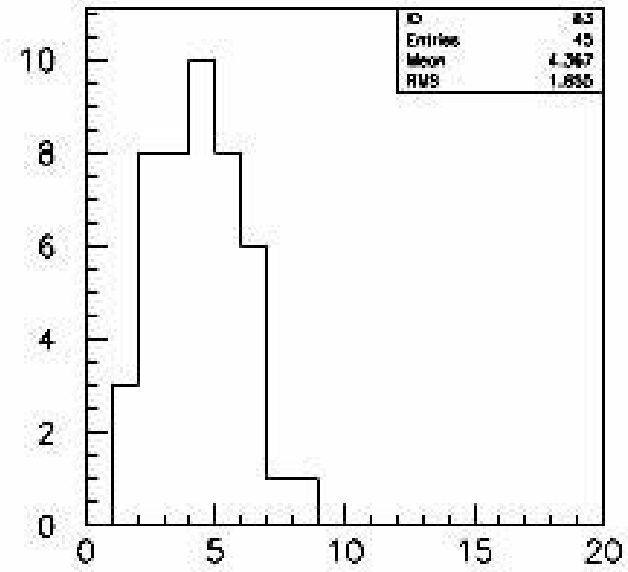
Funky Hadronic Event Scenario



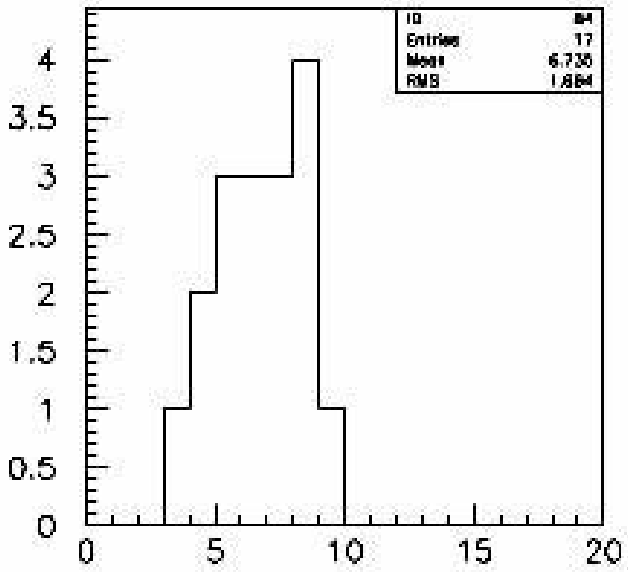
npri nclos<2 CCmu



npri nclos>1 CCmu



npri nclos<2 CCe



npri nclos>1 CCe

Funky Hadronic Event Scenario

- 19 CCmu events with Eclus > 10 GeV (Histograms 81 and 82 on previous page)
  - 6 events with nclos>1 → 32% +/- 13%
- ~27 NC events with Eclus > 10 GeV
  - 10 events with nclos <2 (see page 1)
  - 17 events with nclos>1 → 63% +/– 12%

- Expect selection/location bias to be commensurate with # of primary tracks
  - Not seen on previous histograms
- Hard to envisage a bias which increases the number of NC events over CCmu events

I consider this scenario unlikely